

DETAILED ACTION

1. This communication is in response to the amendment filed on 8/12/2008.

After thorough search and examination of the present application and in light of the prior art made of record, claims 1 and 21 (renumbered as 1-2) are allowed.

Claims 2-20 and 22-27 have been cancelled.

EXAMINER'S AMENDMENT

2. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Attorney, Peter A. Balnave, Registration No. 46,199 on October 20, 2008.

Please amend the claims, which were filed on 8/12/2008 with new versions as follows:

1. (Currently Amended) A computer implemented method of incrementally maintaining an algebraic aggregate function in an automatic summary table (AST) of at least one relational database, said method comprising:

creating a first work area associated with an additional column for said algebraic aggregate function of said AST;

creating a second work area associated with variables and error estimate variables of distributive aggregate functions used to compute said algebraic aggregate function,

wherein each said variable and each said error estimate variable corresponds to a row of said AST,

wherein each said error estimate variable estimates an error between a value of said variable and a full recomputation value of said variable; and

wherein said variables and said error estimate variables are incrementally maintainable;

upon receiving a query corresponding to said AST, populating and either inserting or deleting said variables and said error estimate variables within said second work area to provide an incrementally maintained variable and an incrementally maintained error estimate variable to said first work area;

if when a ratio of an estimated error value of said algebraic aggregate function for a given row of said AST to said incrementally maintained error estimate value, corresponding to said given row, exceeds a threshold, then selectively recomputing a value for said variable, otherwise maintaining said incrementally maintained error estimate value of said variable; and

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reporting said algebraic aggregate function of said AST, based on either said recomputed value or said incrementally maintained error estimate value, in response to said query.

2-20. (Cancelled).

21. (Currently Amended) A program storage device readable by computer, ~~tangibly~~ embodying a program of instructions executable by the computer to perform a method of incrementally maintaining algebraic aggregate functions in automatic summary tables (ASTs) of at least one relational database, said method comprising:

creating a first work area associated with an additional column for said algebraic aggregate function of said AST;

creating a second work area associated with variables and error estimate variables of distributive aggregate functions used to compute said algebraic aggregate function,

wherein each said variable and each said error estimate variable corresponds to a row of said AST,

wherein each said error estimate variable estimates an error between a value of said variable and a full recomputation value of said variable; and

wherein said variables and said error estimate variables are incrementally maintainable;

upon receiving a query corresponding to said AST, populating and either inserting or deleting said variables and said error estimate variables within said second work area to provide an incrementally maintained variable and an incrementally maintained error estimate variable to said first work area;

if when a ratio of an estimated error value of said algebraic aggregate function for a given row of said AST to said incrementally maintained error estimate value, corresponding to said given row, exceeds a threshold, then selectively recomputing a value for said variable, otherwise maintaining said incrementally maintained error estimate value of said variable; and

reporting said algebraic aggregate function of said AST, based on either said recomputed value or said incrementally maintained error estimate value, in response to said query.

22-27. (Cancelled).

Reason for Allowance

3. The prior art made of record does not teach or fairly suggest the combination of elements, as recited in independent claims 1 and 21.

More specifically, the prior art of records does not specifically suggest the combination of “wherein said variables and said error estimate variables are incrementally maintainable; upon receiving a query corresponding to said AST, populating and either inserting or deleting said variables and said error estimate

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variables within said second work area to provide an incrementally maintained variable and an incrementally maintained error estimate variable to said first work area; when a ratio of an estimated error value of said algebraic aggregate function for a given row of said AST to said incrementally maintained error estimate value, corresponding to said given row, exceeds a threshold, then selectively recomputing a value for said variable, otherwise maintaining said incrementally maintained error estimate value of said variable" in combination with all the other limitations in the independent claims 1 and 21.

These features together with other limitations of the independent claim are novel and non-obvious over the prior art of record.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Contact Information

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Usmaan Saeed whose telephone number is (571)272-4046. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hosain Alam can be reached on (571)272-3978. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Usmaan Saeed
Patent Examiner
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October 22, 2008

/Hosain T Alam/

Supervisory Patent Examiner, Art Unit 2166